



PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of

Nancy DESGARDIN et al.

Group Art Unit: 3643

Application No.: 10/659,306

Examiner: J. GELLNER

Filed: September 11, 2003

Docket No.: 117136

For: SOLID COMPOSITIONS WHICH GENERATE HYDROGEN BY COMBUSTION,
COMPRISING AN ALKALI METAL BOROHYDRIDE OR ALKALINE EARTH
METAL BOROHYDRIDE AND STRONTIUM NITRATE SR(NO₃)₂

PRE-APPEAL BRIEF REQUEST FOR REVIEW

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

After entry of the Notice of Appeal and the fee in the amount of \$500 concurrently filed herewith, Applicants respectfully request review of the Final Rejection mailed October 20, 2006 in the above-identified application.

Applicant appreciates the courtesies extended by Examiner Gellner to Applicant's representative during the telephone interview conducted on January 26, 2007. In that interview, Examiner Gellner agreed that the Amendments set forth in the December 21, 2006 Amendment After Final Rejection would be entered and considered of record upon again filing same with the Notice of Appeal.

I. Status of Pending Claims

Claims 10 and 22-30 are pending in this application. By the December 21, 2006, Amendment After Final Rejection, claim 22 is amended and claims 13-21 are canceled.

II. Grounds of Rejection Presented For Review

The Office Action mailed on October 20, 2006 rejects claims 13, 15-16 and 18 under 35 U.S.C. §102(b); and rejects claims 17, 19-22 and 24-30 under 35 U.S.C. §103(a). By the Amendment After Final Rejection, claims 13-21 are canceled, rendering their rejection moot. Thus, only the rejection of claims 22 and 24-30 are discussed herein.

The Office Action rejects claims 22 and 24-30 under 35 U.S.C. §103(a) as obvious over U.S. Patent No. 4,032,259 to Ward ("Ward") in view of U.S. Patent No. 6,165,295 to Wagaman ("Wagaman"). To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves, or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference much must teach or suggest all the claimed limitations. See *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). The Office Action fails to meet these three basic criteria in rejecting instant claims 22 and 24-30.

A. There Was No Suggestion or Motivation to Combine the References

The sole assertion upon which the Office Action rejects instant independent claim 22 is that "Wagaman ... discloses that a rocket propellant can be used in fuel cell (col 3, lines 44-48); thus it would allegedly have been obvious to an ordinarily skilled artisan at the time of the invention to modify Ward by Wagaman in order to obtain the claimed invention. See October 20, 2006 Office Action, page 4, line 2. This assertion mischaracterizes both the invention in Ward and statements in Wagaman, and is predicated upon critically flawed logic.

Wagaman states:

"These objects are achieved in the present invention which provides a family of water-based gas-generating liquid compositions which may be used in rocket propulsion, torpedo propellants, air bags, and other applications. Applications also include use in oxygen generators and in fuel cells."

The Office Action's conclusion that a rocket propellant can thus "be used in fuel cell [sic]" both misinterprets Wagaman's plain language, and produces a logically absurd result. Wagaman clearly states that *its water-based gas-generating liquid compositions* in particular may be used in rocket *propulsion*, and may be used in fuel cells. The Office Action thus incorrectly postulates that 1) all items used in rocket propulsion are rocket propellants; and 2) Wagaman's *water-based gas-generating liquid compositions* are rocket propellants. Wagaman clearly indicates throughout its disclosure that its *liquid* oxidizer mixes with or contacts fuel in both monopropellant and bipropellant systems; thus the oxidizer alone is not the "propellant." See Wagaman, col. 8.

Secondly, Ward does not teach a rocket propellant. Rather, Ward teaches a *solid* composition comprising a fuel and an oxidizer for producing heat, smoke, sound and most importantly, increased luminous efficiency in *pyrotechnic devices*. Ward's invention can be used as a fuel *ingredient* in rocket motor igniters, but only to provide more reliable *ignition* of the rocket propellant itself. See Ward, col. 2, lines 5-45.

Clearly, even if *all* rocket propellants could be used in fuel cells, none of Ward, Wagaman or the claimed invention would be implicated because none alone comprise rocket propellants. Further, Wagaman's statement that its compositions may be used in both rocket *propulsion* and fuel cells is nothing but a simple truism; hundreds of materials, if not more, can be used in some aspect of both rocket propulsion and fuel cells.

Additionally, Wagaman notes throughout its disclosure (e.g., the title "Gas Generating Liquid Composition"), that compositions of particular interest are *liquid* oxidizers, and that *liquids* are necessary for many propulsion systems since they can be pumped and are generally easier to handle and store than solids. See col. 1, lines 17-22. In accordance with its liquid requirement, Wagaman discloses several exemplary uses and advantages that are

wholly incompatible with, and thus teach directly away from, the use of a solid phase composition having the claimed properties.

For example, Wagaman achieves a low freezing point to *avoid solids*; see Wagaman, col. 4, lines 60-65. Wagaman also expresses that the high density associated with its liquid form has more mass and chemical energy per unit volume, and thus allows for smaller storage volume and reduced weight. Presumably, the use of solids, having a different density than the liquid form, would thus either constitute a novel improvement upon Wagaman, or be seen as inferior to and therefore taught away from by Wagaman; see col. 5, lines 32-40. Additionally, Wagaman touts the customizability of its liquid based on its water content, the low cost associated with its main ingredients (i.e. ammonium nitrate and hydrogen peroxide), its ability to readily chemically biodegrade and its water solubility for simple disposal; and its use in breathable air generators. See col. 7, lines 7-18 and col. 10, lines 43-52.

Clearly, an ordinarily skilled artisan would not have been motivated to modify Ward's solid pyrotechnic composition by using Wagaman's liquid oxidizer. Converting Wagaman's liquid oxidizer to a solid composition is virtually incompatible with, and taught away from by each aspect and advantage thereof disclosed in Wagaman.

For at least these reasons, there existed no conceivable suggestion or motivation at the time of the invention to look from Ward to Wagaman to obtain the claimed features because Ward and Wagaman are non-analogous art, Wagaman teaches directly away from the claimed invention, and combining the references would not have obtained the claimed features.

B. The References Do Not Teach or Suggest all Limitations

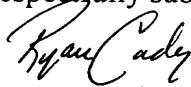
Ward does not disclose a rocket propellant. Rather, Ward discloses a solid pyrotechnic composition for producing heat, smoke and increased luminous efficiency. Wagaman does not teach that a rocket propellant can be used for a fuel cell, but rather teaches only a water-based gas-generating liquid composition that may be used in fuel cells. Neither

reference discusses or suggests a pyrotechnic hydrogen generator for a proton exchange membrane fuel cell comprising an alkali metal borohydride or alkaline earth metal borohydride and strontium nitrate $\text{Sr}(\text{NO}_3)_2$ as claimed. Further, at least because the references are non-analogous art and Wagaman teaches directly away from the claimed invention, there can be found no conceivable suggestion or motivation to combine or modify the references to obtain the features of even independent claim 22.

Because claim 22 is believed to be patentable over the cited references, claims 24-30 depending therefrom are also believed to be patentable over the cited references. Prompt examination and allowance of new claims 22 and 24-30 are respectfully requested.

III. Conclusion

For all of the reasons discussed above, it is respectfully submitted that the Final Rejection is predicated upon legal and factual deficiencies, and that all the pending claims are in condition for allowance. Because the prior art fails to establish a *prima facie* case of obviousness, withdrawal of the Final Rejection and allowance of this application are respectfully requested.

Respectfully submitted,

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